Agrifood Awareness AUSTRALIA Limited

TOWARDS COEXISTENCE:

Management practices for agricultural production systems

"Genetically modified (GM) crops were grown on 81 million hectares in 17 countries, including Australia in 2004. The products of these crops find a ready market and it should be a foregone conclusion that Australian farmers will continue to have access to new GM crops and new market opportunities.

GM crops can coexist with crops grown in other systems – it's already happening in Australia with conventional and organic crops. Incorporating GM crops into a coexistence model is a logical next step.

With the right regulatory framework in place, backed up by science and not hindered by politics, meeting market demands and delivering product choice are well within the capabilities of Australia's rural sector."

PROFESSOR JOHN LOVETT
Chairman
Agrifood Awareness Australia Limited

The rapid global adoption of GM crops alongside organic, specialty and conventional crop production systems has resulted in much attention being given to the concept of coexistence. This increase in attention is due to the growing consumer and producer awareness of providing choice, plus the need for traceability in the food supply irrespective of the production system utilised – be that organic, specialty, GM or conventional.

Recently, countries around the world, including Australia, have developed or introduced coexistence protocols. The aim of these is to manage the introduction of approved GM crops in such a manner that the consumer and producer desire for choice and traceability is delivered.

Traceability within and between production systems that coexist, whether they be organic, specialty, GM or conventional, is not driven by product or crop safety – which is regulated federally – but is about the economic impact of the production and marketing of the crops.

Coexistence of different production systems and the need for traceability requires an increasing commitment to supply chain management to ensure:

- → final product integrity
- → prevention of unintended presence of 'GM material' to below market thresholds
- → full traceability of products through the supply chain
- → sampling and testing regimes for product verification
- → minimal costs for all supply chain participants.

Currently, organic and specialty grain growers implement coexistence management practices to minimise risks and maintain produce integrity. This is especially true for organic producers since the National Standard for Organic and Biodynamic Production prohibits the use and presence of any genetically modified organisms (GMOs) in organic systems.

This booklet outlines some of the management practices that organic, specialty, GM and conventional producers can implement to:

- → maintain integrity of coexisting production systems
- → allow for traceability within and between the production systems
- → maintain the integrity and marketability of the product within the supply chain.

BEFORE YOU GROW

Know good agricultural practice

The Australian grains industry has developed recommendations for farmers to implement in relation to good agricultural practices which, if followed, result in the product meeting both domestic and export customer expectations. In accordance with these practices, producers should:

- maintain complete farm records for all paddocks and crops
- incorporate sound crop rotation and production practices in farm management
- select crop varieties and seed treatments suitable for local conditions
- use certified or quality assured seed for planting a crop in preference to farmer-saved planting seed
- use farmer-saved seed grown only from a crop established with certified seed
- establish base weed control and cultural practices on the weed spectrum and the herbicide resistance status
- declare and identify products at the first point of delivery in the supply chain
- implement farm hygiene practices in relation to farm equipment; seed and grain handling, transport and storage; and, chemical storage and handling
- incorporate integrated crop and weed management practices, such as rotating herbicide groups and modes of action; minimising the adventitious presence of off-type seed; and, minimising gene flow
- ensure that contractors are adequately informed of the standard required for undertaking tasks such as spraying, windrowing, harvesting or transporting. If required, contractors should be able to demonstrate that recommended procedures were followed.

Know your crop

Seed production should conform to 'best practice' procedures, as established nationally and internationally. Prior to planting, any licensing agreements accompanying the product at the point of seed purchase should be read and understood. All planting instructions and crop management plans should be followed and copies of all documents involving seed suppliers should be retained.

Where applicable, growers should know the pollen flow distances for an individual crop. This is usually obtainable by looking at the isolation distances required for the production of certified seed, as this will be the maximum distance required.

In the case of herbicide tolerant crops, use as many different weed control options as possible, through all phases of crop rotation, and rotate herbicides with different modes of action in order to minimise herbicide resistant weeds. Rotate GM and/or conventional herbicide tolerant crop varieties. Remove "volunteers" to further reduce pollen flow. Other management options which can also reduce the prevalence of "volunteers" include adjusting the timing of windrowing and harvest to reduce pod shatter, thoroughly cleaning equipment, and using secure leak-proof transport.

Currently, cotton is the only broadacre GM crop grown in Australia. However this may change in the future, so before planting your crops, you should verify the identity of the seed you are using and obtain documentation from the seed supplier for your records. Retain copies of these records, seed samples and seed supplier documentation.

Know the regulations

Commercial approvals for GM crops may be accompanied by licence conditions imposed by the Office of the Gene Technology Regulator (OGTR). Such conditions will comprise elements of the crop management plan developed by the technology provider selling the GM seed. Training may also be provided to growers to ensure they are aware of the management requirements for the GM crop being introduced. Farmers must read and understand these conditions upon purchasing the seed. For example, insect-resistant crops may require refuges to minimise resistance developing amongst target pests. When a crop is modified to incorporate insect or herbicide resistance, management measures may also be imposed by the Australian Pesticides and Veterinary Medicines Authority (APVMA) to ensure the longevity of the product.

Know the thresholds

Impurities such as rodent faeces, weeds, grasses and other plant material are inevitable in grain production. As a result, Australian and international regulatory authorities, together with seed and grain industry bodies, have recognised the need for establishing practical levels or thresholds for such content, including GM content. These thresholds have been established in seed production, on-farm and in the marketplace. For example, the Australian Oilseeds Federation has a policy which sets a 0.9 per cent threshold for GM canola content in non-GM canola in order to satisfy non-GM market opportunities. The Australian Seed Federation has also established a position on thresholds for GM canola which states, "the threshold level for adventitious presence of GM canola seed in non-GM canola sowing seed be 0.5 per cent, but reserves the right to amend this figure should new information warrant a change."

Such thresholds consider both international markets for Australian produce as well as domestic food labelling laws. For example, in relation to GM foods, Food Standards Australia New Zealand (FSANZ) has established GM food labelling laws which allow for up to one per cent unintended GM content in a food product before labelling is required.

Most of Australia's key export markets have set tolerances between 0.9 per cent, such as Europe, and five per cent in food products. The pre-farm and on-farm thresholds are developed with these end-product thresholds in mind. According to the Australian Oilseeds Federation, "the combination of sound crop management practices and minimal isolation or buffer zones provides a basis for Australian growers to meet the current market and regulatory non-GM requirements."

Know the testing procedures

Testing kits are available to detect the presence of each approved GM characteristic. Know the types of testing procedures available to establish the presence of the GM crop being grown. The Australian Government Department of Agriculture, Fisheries and Forestry commissioned a study on the various technologies available to detect GM materials in commodities and food. The resulting report states that a series of questions should be asked, prior to undertaking testing on a product, to ensure that the most appropriate testing method is used.

The questions include:

- → why is the product being tested for GMOs?
- → what level of information is being sought by the test?
- → is this a raw commodity, an intermediate material, or a highly processed product?

Such testing methods, the costs involved, and where testing takes place along the supply chain, are likely to be established in crop management plans associated with any newly approved GM crop in the future.

Know your farm

Know your crop production area and, when possible, utilise paddocks in crop rotations which are located in positions which will minimise pollen movement to or from neighbouring crops. Select isolated paddocks for crops such as canola which are wind and/or insect pollinated. Physical barriers such as firebreaks or header trails to minimise pollen flow could also be implemented.

Know your neighbours and their crops

It is important to establish good communication networks with your neighbours, particularly in relation to the organic, specialty or GM status of the crops you are going to plant near farm boundaries.

Let neighbours know which crops you are growing and what you are doing to maximise production integrity between crops. This can be done by telling your neighbours where GM, organic or speciality paddocks are located. Signposting the status of your farming operation (for example "organic production") is one way of raising awareness of your requirements.

Information about the crops being grown in the local area can be gained from neighbours, extension officers, Department of Primary Industries' staff, rural suppliers and seed distributors, so this information can also be utilised to gauge management requirements.

To minimise any pollen movement you could adjust your varieties and/or planting dates to prevent your crop and your neighbour's crop flowering at the same time. If they know of your intentions, your neighbour may also be able to adjust paddock rotations.

Know your equipment

It is vital that you know how the equipment used on your farm is cleaned, including the equipment used by contractors or any that is borrowed or hired for use on your farm. If the equipment is used for planting, harvesting or handling organic, specialty, GM and/or conventional crops make sure it is thoroughly cleaned and inspected between each use. Documentation to show traceability and freedom from plant material prior to shipment should be maintained for your records. When possible, dedicated transport should be sought for GM, organic or specialty crop produce, and third-party documentation of cleaning procedures should be kept.

Know your transport

Use secure, leak-proof, transport on-farm and off-farm to maintain high standards of crop hygiene between crops. Thoroughly inspect and clean trucks and trailers after your crops have been unloaded, including tarps and trailer covers. Keep records regarding the cleanliness of transport equipment so that you have a paper trail verifying that your crops did not impact someone else's crop. In the case of grain, bulk handlers will need to manage the grain transfer/handling/storage process and maintain a correlation between farm source and transfer to storage location. As new crops become available, grower declarations regarding the variety of the crop you have grown will likely include declaring the GM status. This declaration will then be verified by sampling the produce.

BEFORE YOU GROW

Know your crop storage

Storage units should be carefully inspected and cleaned prior to use. If appropriate, dedicated facilities should be used for organic, specialty or GM produce, or facilities for produce receival should be well segregated. Once again, documentation of the cleaning of equipment used before handling produce should be kept for your records. Have proper cleaning equipment, such as air compressors or vacuums, available.

Know your harvest

Samples of your crop will be required to verify your declarations regarding the status of your crop. Retain copies of crop samples and test results. Sample collection, assessment, and documentation procedures should be conducted according to best management practices.

Know your records

Monitoring and traceability throughout the supply chain will rely on each member of the chain creating and maintaining good records. Records will need to be sufficient to allow verification of processes and provide evidence of completion of activities. Disciplined recordkeeping at every stage of the supply chain is vital to the integrity of the whole system of coexistence.

Each supply chain participant needs to:

- determine who is responsible for creating and maintaining quality records
- develop record systems that minimise paperwork and time
- make sure records are completed legibly
- find a method to store them safely
- keep records for at least seven years, or long enough to ensure they are available for process verification, if necessary.

By maintaining records of where your crops were planted, including maps using GPS for your organic, specialty, GM and conventional crop locations, and documenting your efforts to minimise pollen flow between crops you will be better protected for any liability issues should above-threshold mixing (co-mingling) of seed occur.

Your efforts to minimise co-mingling should be well documented. Valid records of crop yields, test results, cleaning activities, storage, transport and sales may help establish claims for losses, should contamination occur.

Know your buyers

The market requirements for the crops being grown will be specified by your marketer, however, you should be aware of such demands for the product that you are growing. The number of countries growing, developing and establishing regulatory regimes for GM products is growing each year, but not all GM crops are accepted by all markets. Segregation of some crops may be needed to meet market requirements.

Know your buyer's sampling and testing protocols and the tolerances you will be expected to meet for the crops grown. If your crops are being exported there may also be labelling requirements for the marketer. Buyers, seed companies, extension officers and technology developers should be able to advise you on any GM market issues. Communicate with buyers or certifying agents (specialty, GM, organic or conventional) concerning co-mingling issues.

Know your risk

The Australian Government has chosen not to implement a special liability regime for economic loss arising from the unintended presence of GM crops. In all cases where the activities of one farmer affect a neighbour, recourse is available through existing statute and common law. Where such action is contemplated, farmers are recommended to seek their own independent legal advice.

Know your insurance policy

From a liability perspective, to insure your crop you must comply with all government laws, regulations, licensing conditions and recognised standards for GM technology. Producers will need to be aware of Non-Compliance Exclusion clauses which specifically state that insurance companies will not pay for claims where liability has been caused by, contributed to, or arisen from not complying with all government laws, regulations, licensing conditions and recognised standards.

To find out more about insurance for your organic, specialty, GM or conventional crops, producers are advised to talk to their insurance agent, broker or local insurance representative.

Further information

A Plan for Co-existence: Best Management Practices for Producers of GM and non-GM crops. (2004) James Riddle, Endowed Chair in Agricultural Systems at the University of Minnesota, USA
www.misa.umn.edu/Other/GMOlegal-21_web.pdf

Adventitious Presence in Canola. (2003) Australian Oilseeds Federation. Fast Facts Series
www.australianoilseeds.com/__data/page/237/Fast_Facts_1_–_Adventitious_Presence_in_Canola.pdf

Adventitious Presence in Canola Sowing Seed (2003) Australian Seed Federation
www.asf.asn.au/news/APInformationPaper.pdf

Canola Industry Stewardship Principles: For coexistence of production systems and supply chains. (2003) Gene Technology Grains Committee
www.croplifeaustralia.org.au

Liability Issues Associated with GM Crops in Australia. (2003) Australian Government Department of Agriculture, Fisheries and Forestry
www.daff.gov.au/corporate_docs/publications/pdf/innovation/liability_issues_paper_final.pdf

Managing GM crops in Australia: GM crops, segregation and liability in the Australian grains industry (2005) ACIL Tasman
www.croplifeaustralia.org.au

NACMA Grains Standards. (2004) National Agricultural Commodities Marketing Association
www.nacma.com.au

Review of Technologies for Detecting Genetically Modified Materials in Commodities and Food (2002) Prepared by the Australian Government Analytical Laboratories for the Australian Government Department of Agriculture, Fisheries and Forestry
www.affa.gov.au/corporate_docs/publications/word/innovation/agal_report.doc

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This information is based on a publication titled *A Plan for Co-existence: Best Management Practices for Producers of GM and non-GM crops* which was written by James Riddle, Endowed Chair in Agricultural Systems at the University of Minnesota, USA. It has been expanded and modified to include relevant Australian material.

Agrifood Awareness Australia Limited is an industry initiative, established to increase public awareness of and encourage informed debate about, gene technology. Agrifood Awareness Australia Limited is supported by CropLife Australia, the Grains Research and Development and Corporation, and the National Farmers' Federation.

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